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(54) Collapsible seat assembly

(57) A pair of seat members (10, 20) are each hingedly connected to the top of a common upright support element (30) for movement between a collapsed position hanging adjacent the upright element (30) and an operative position extending perpendicular thereto. Each seat member (10, 20) also has a swingable leg (40, 50) to support it in its operative position and releasable catch means (46, 47, 48) preferably retain the legs (40, 50) in their supporting positions. When erected the assembly forms a sturdy bench for two persons, yet when collapsed it is compact and readily movable, e.g. by means of rollers (35) and a retractable handle (61).

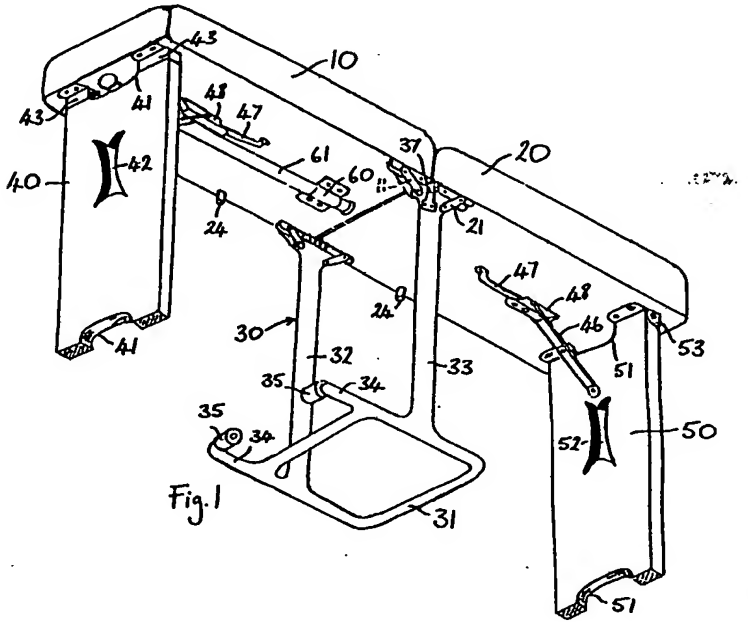

Fig. 1

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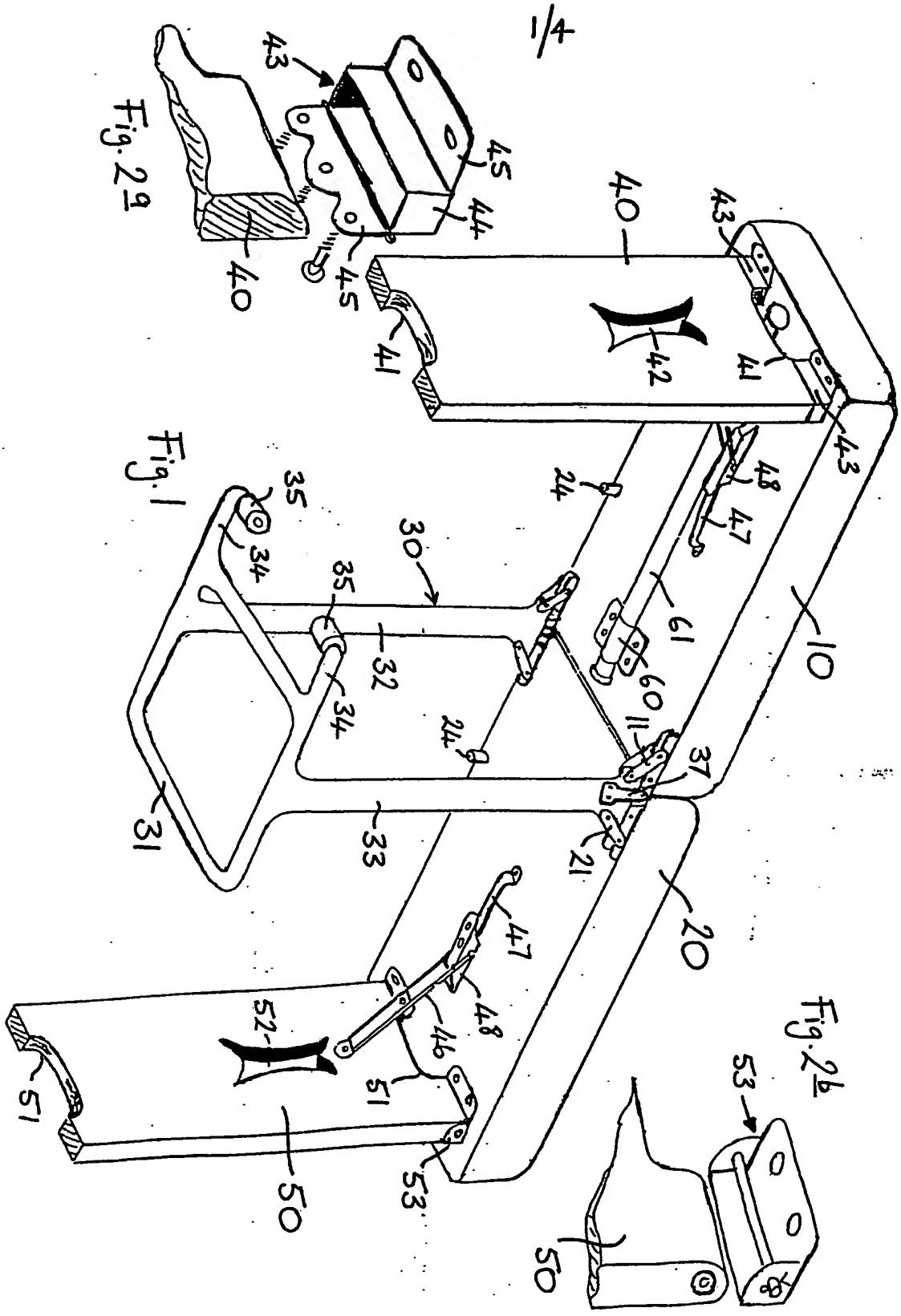

Fig. 2a

Fig. 1

Fig. 2b

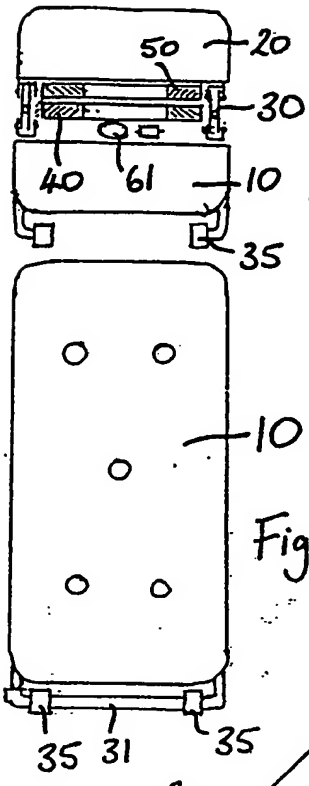

Fig. 7

Fig. 6

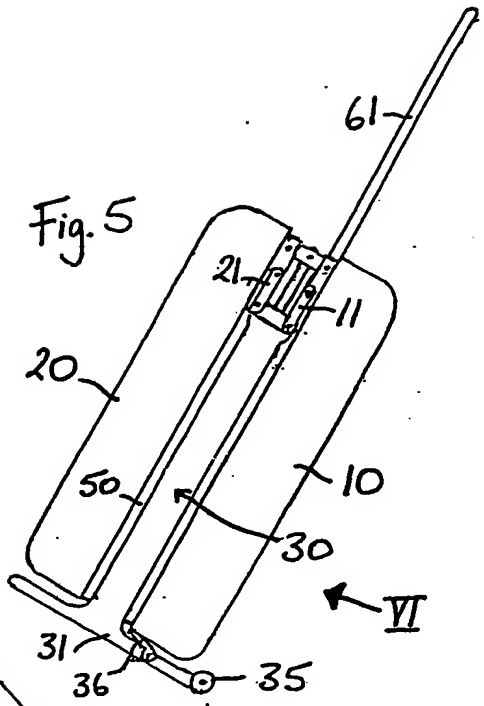

Fig. 5

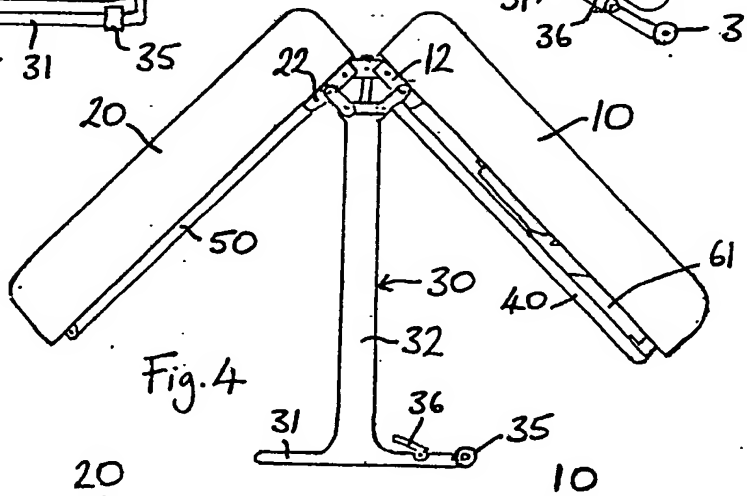

Fig. 4

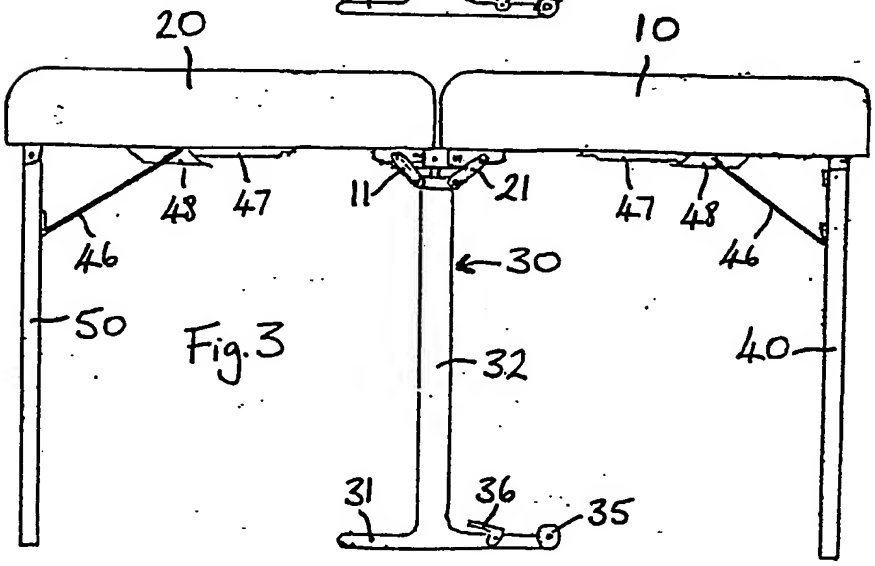

Fig. 3

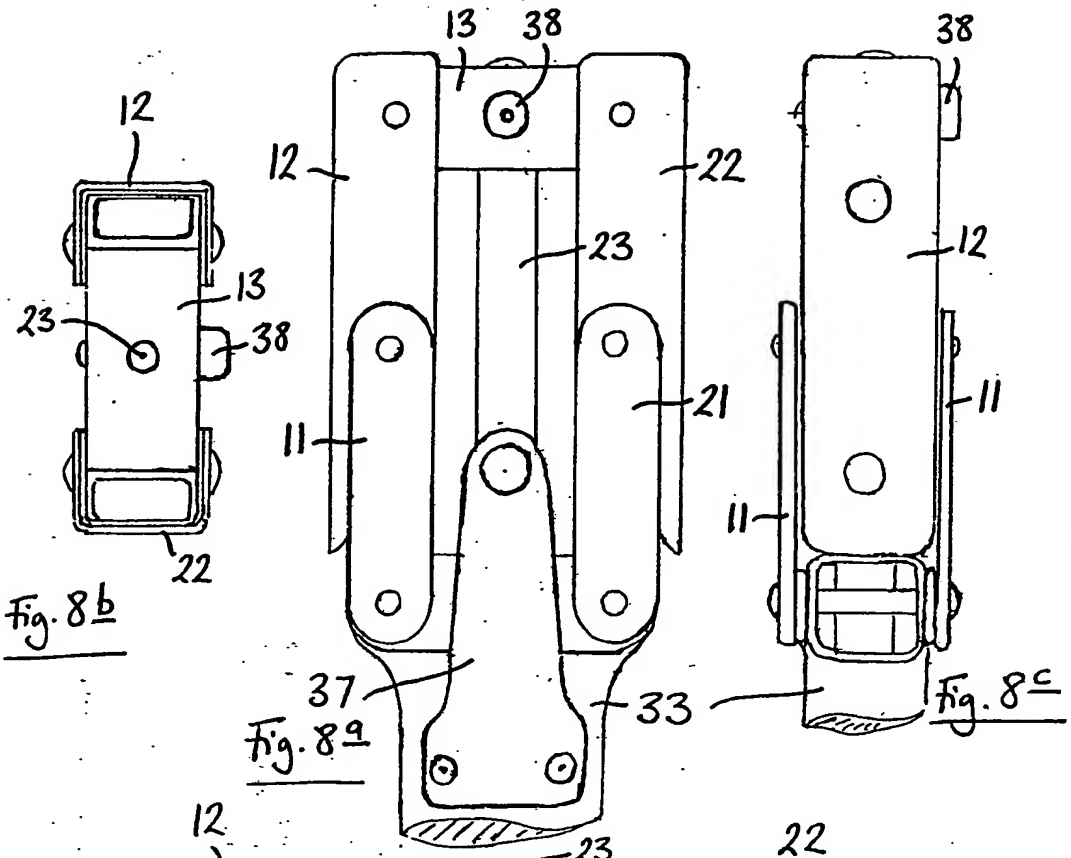
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Fig. 8b
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Fig. 8a
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11
Fig. 8c

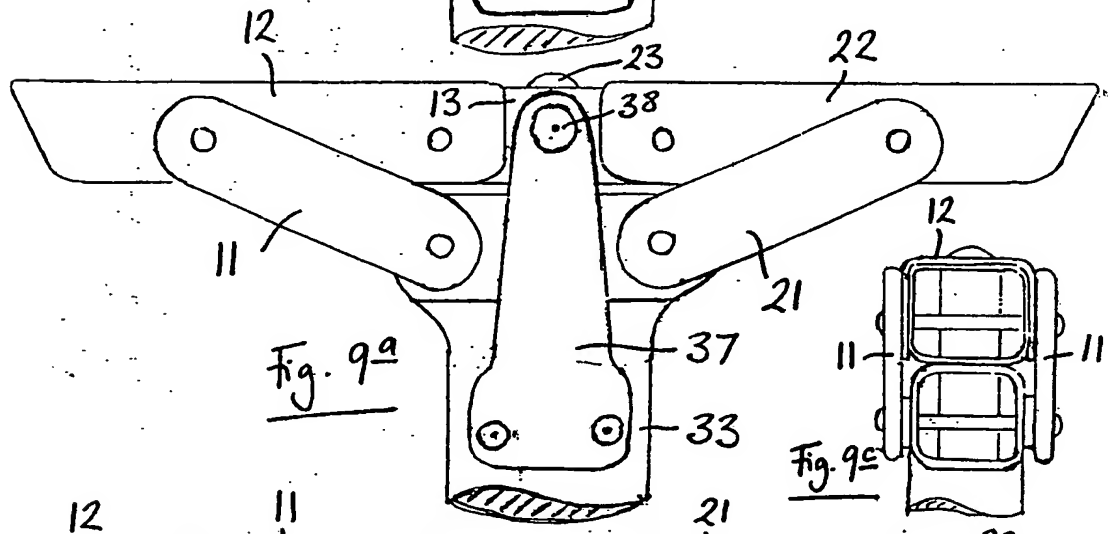
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Fig. 9a
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Fig. 9c

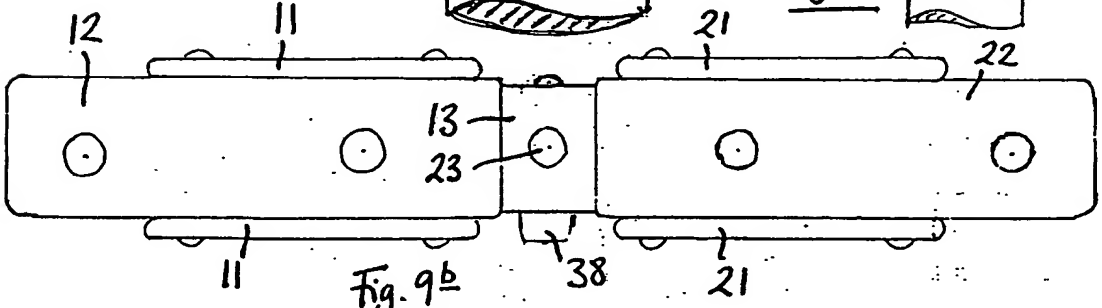
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Fig. 9b

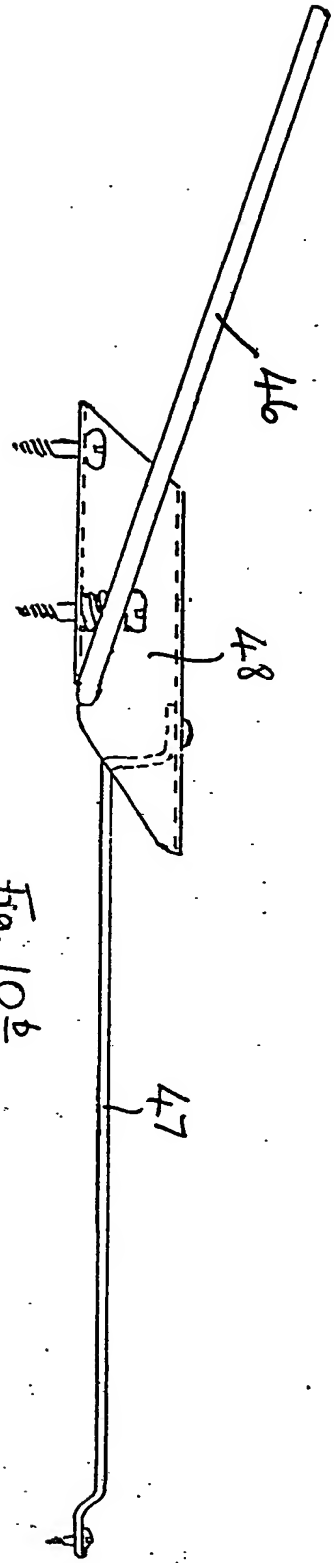

Fig. 10a

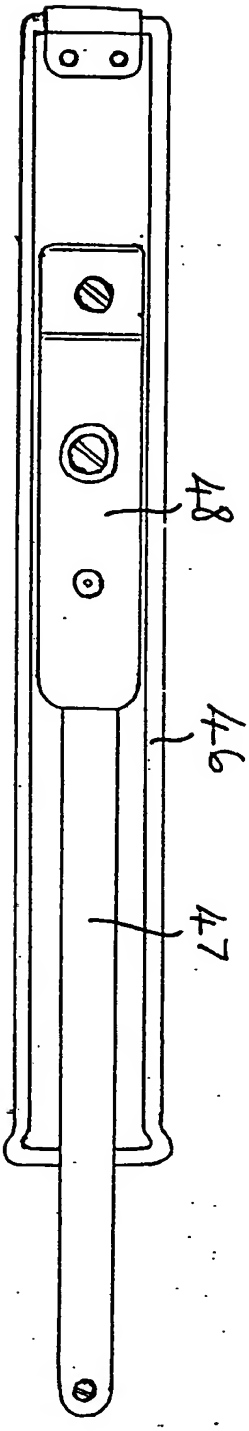

Fig. 10b

SPECIFICATION

Collapsible s at assembly

This invention relates to a collapsible seat assembly.

According to the present invention, a collapsible seat assembly comprises a pair of seat members, each hingedly connected to the top of a common upright support element for movement between a collapsed position hanging adjacent the upright element and an operative position extending substantially perpendicular to the upright element, each seat member having, towards its outer free end, a swingable leg which is capable of supporting said seat member in its operative position.

Each swingable leg is conveniently movable between an inoperative position lying closely adjacent the underside of the respective seat member and supporting position extending perpendicular to the respective seat member (and thus substantially parallel to the common upright support element).

Preferably respective releasable catch means are provided to retain the seat members in their operative position and to retain the legs in their supporting position, so that the assembly, when erected, is quite steady and cannot be inadvertently collapsed.

The seat members are conveniently disposed at opposing sides of the common upright support element so that when they are both in an operative position they are in alignment and form, for all intents and purposes, a continuous elongate bench.

Advantageously, the common upright support element has a base which is provided with rotatable means, such as bearings, casters or wheels, in such a way that the seat assembly is movable thereby only when the seat members are in their collapsed position. A retractible handle is also advantageously provided to facilitate movement of the collapsed seat assembly by way of the aforesaid rotatable means. Such a handle may, for example, be telescopically accommodated in a pair of tubular legs..

In most cases it will be necessary to tilt the collapsed assembly before it can be moved on the rotatable means by pulling or pushing the handle. In such circumstances further releasable catch means are preferably provided to retain one or both seat members in their collapsed position and prevent unwanted swinging thereof.

A preferred embodiment of the seat assembly of th inv ntion is thus both compact and readily movable (by means of the handle and the rotatable means) from one locati n to another when in the collapsed condition. It is theref re extrem ly useful in places where spac is at a premium, y t where additional seating may be required at any tim , e.g. for use in conjunction with a collapsible tabl . In this respect it can be stored in collapsed condition in any convenient unobtrusive location, e.g. at the side of a room, and, when seating is needed, moved out to the desired location of the seating and erected.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view, primarily from the underside, of a preferred practical embodiment of the collapsible seat assembly of the invention when in the fully operative condition;

Figures 2a and *2b* are enlarged, fragmentary perspective views illustrating the hinge connections of the legs of the respective seat members;

Figure 3 is a side elevation, to a reduced scale, of the seat assembly shown in Fig. 1, still in its operative condition;

Figure 4 is a similar view of the same seat assembly as in Figs. 1 and 3 when partially collapsed;

Figure 5 is a similar view of the same seat assembly as in Figs. 1, 3 and 4 when collapsed and tilted, ready for movement, and with the handle extended;

Figure 6 is an end view of the same seat assembly as in Figs. 1 and 3 to 5 when in its collapsed condition, i.e. a view in the direction of the arrow VI in Fig. 5;

Figure 7 is a plan view of the same seat assembly when in its collapsed condition;

Figures 8a, 8b, 8c are respectively enlarged fragmentary side, plan and end views of the hinge connections between the seat members and the central support element in the collapsed condition of the assembly;

Figures 9a, 9b, 9c are similar views, i.e. side, plan and end views, of the same hinge connections as in Fig. 8 in the operative condition of the assembly;

Figure 10a is an underside plan view of a releasable catch mechanism holding a leg in its inoperative position; and

Figure 10b is a schematic side view of the same mechanism as in Fig. 10*a* when holding the leg in its supporting (operative) position.

Referring firstly to Figs. 1, 3 and 4 of the drawings, a preferred embodiment of the collapsible seat assembly of the invention comprises a pair of seat members 10, 20 each hingedly connected to the top of a common/central support element 30. The seat members 10, 20 are disposed at opposing sides of the support element 30 and they are both rectangular and of approximately equal size, ach having one of their shorter sid s hing dly connected to the element 30. Moreov r, th seat members 10, 20 both consist of wooden boards which ar upholster d so as to be about 10 cm thick.

Th common support element 30 is made of m tal and consists of a base, in th form of a rectangular frame 31, and a pair of hol-

low uprights 32, 33 extending perp ndicular to the plane of the frame 31, roughly midway along opposing sides of the frame 31. At one side of the uprights 32, 33 (the left hand side in Fig. 1, the right hand side in Figs. 3 and 4), frame extensions 34, which lie in the plane of the frame 31, carry rotatable means in the form of respective roller bearings 35. These bearings 35 enable the assembly to be moved when the assembly is in the collapsed condition and tilted over towards the bearings 35 as indicated in Fig. 5 and as will be explained further hereinafter.

The hinge connection arranged between each upright 32 (or 33 respectively) of the central support element 30 and the side edges of the two seat members 10, 20 is illustrated in detail in Figs. 8 and 9. This connection comprises a pair of linkages 11, 21 which extend in symmetrical manner between the slightly expanded top portion of the respective upright 32 (or 33) and, in each case, a respective elongate bracket 12, 22 mounted beneath the side edge margin of the relevant seat member 10 or 20. The linkages 11, 21 are pivotally connected at each end and the brackets 12, 22 are also connected to each other by a cross-piece 13, which is likewise pivoted at each end relative to the respective brackets 12, 22. The cross piece 13 is fixed at its centre to a dependent rod 23, which extends downwards into the respective hollow upright 32 (or 33). By way of these hinge connections disposed at each side (i.e. at the top of each of the uprights 32, 33), the seat members 10, 20 are each swingable between a collapsed position hanging adjacent the common support element 30 (see particularly Fig. 5 and Fig. 8*a*) and an operative position extending substantially perpendicular to the uprights 32, 33 of the support element 30 (see particularly Figs. 1, 3 and 9*a*).

The linkages 11, 21 are pivotally attached to the middle regions of the respective brackets 12, 22 (which are fixed to the undersides of the seat members 10, 20 respectively). With both seat members 10, 20 in their collapsed position, both the linkages 11, 21 and the brackets 12, 22 are disposed substantially vertically, in line with each other and parallel to the relevant upright 32 (or 33), as shown in Fig. 8*a*. The facing ends of the brackets 12, 22, which are connected by the crosspiece 13, are, in this position, raised considerably further above the level of the top of the uprights 32, 33 compared to their positi n when the seat m mbers 10, 20 are swung into their op rative position (Figs. 3, 9*a*) and the rod 23 is thus withdrawn to som extent from the hollow upright 32 (or 33). In particular type of hinge conn ction op rates v ry sm othly and means that the seat members 10, 20 can *only* be simultaneously raised to their operativ position or simultaneously collapsed. Moreover, it enables the seat members 10, 20 to be slightly longer than their height abov the floor when the assembly is erected, in view of the raising of their facing edges, by virtue of the disposition of the linkages 11, 21 and brackets 12, 22, as they swing to their collapsed positions.

Fixed on the underside of each seat member 10, 20 are resilient stop members 24 which abut one of the uprights 32 when the seat members are in their collapsed position.

Closely adjacent the free outer end of each seat member 10, 20 (i.e. remote from the hinged connection to the central support element 30) is a respective swingable leg 40, 50. These legs 40, 50 are formed of solid wooden boards with decorative recesses 41, 51 and slots 42, 52. Each leg 40, 50 is attached to the underside of its respective seat member 10, 20 by respective hinges 43, 53 and is swingable between an inoperative position, lying flat against or substantially parallel with the underside of the respective seat member 10, 20, and a supporting position extending perpendicular to the respective seat member. Of course, the legs 40, 50 can only be swung to their aforesaid supporting positions when the seat members 10, 20 themselves are swung to their operative positions.

The hinges 43, 53 of the respective legs 40, 50 are somewhat different, as indicated in Figs. 2*a* and 2*b*. The hinges 53 for one of the legs 50 are standard angle bracket hinges which permit that leg 50, in the inoperative position, to lie flat against the underside of its respective seat member 20. In contrast, the hinges 43 for the other leg 40 have a block 44 inserted between perpendicular wings 45, that one of said wings 45 to which the leg 40 is attached being pivotal relative to the block 44. The hinges 43 are attached to the underside of the seat member 10 such that the block 44 is interposed between the leg 40 and the seat member 10 so as to hold that end of the leg 40 away from the seat member 10 when the leg 40 is swung to its inoperative position. The underside of the latter seat member 10 also has attached thereto, a sleeve 60 which slidingly retains a longitudinally arranged handle 61. Thus, the leg 40 abuts this sleeve 60 and this handle 61 when swung to its closed position and is held a uniform distance away from th seat member 10 (see Figs. 1 and 4 in this respect).

A catch mechanism in the form of a spring loaded plate 36 is provided on the base of the central support elem nt 30, as shown in Figs. 3 to 5, to hold the seat member 10 in its collapsed position adjac nt the roller b arings 35. This catch m chanism is readily released simply by d pr ssing the plate 36 in the mann r of a pedal. A catch to hold down th other seat member 20 is not n cessary as whenever th collaps d assembly is to b moved it is always tilted towards the roller b arings 35 so that seat member 20 is upper-

most and always t nds to closely abut the support element 30.

A further catch mechanism is provided to hold the seat members 10, 20 in their operative, "bench-forming", position (Figs. 1 and 3). As illustrated in Fig. 1, and in more detail in Figs. 8*a* and 9*a*, this catch mechanism simply consists of a finger-like plate 37 of spring steel attached adjacent the top of one of the uprights 33 and projecting upwardly therefrom. A bevelled projection 38 formed on the side of the relevant cross piece 13 engages into an aperture in this plate 37 when the cross piece 13 is in its lowermost position (i.e. when the seat members 10, 20 extend at approximately 180° to each other). When the seat members 10, 20 are to be collapsed, the plate 37 can simply be pushed aside to release the projection 38 and allow the cross piece 13 to rise.

Finally, further catch means, as indicated in Fig. 10 are provided on the underside of each seat member 10, 20 to hold the legs 40, 50 in their respective inoperative or supporting positions. These catch means comprise, in each case, a metal loop 46 which has one end pivotally attached to the respective leg 40, 50 just above the slot 42, 52 and its other end engaged around an integral guide strip 47 and catch 48, which is fixed to the underside of the respective seat member 10, 20. When the relevant leg 40, 50 is folded to its inoperative position, the catch 48 is accommodated in the decorative slot 41, 51, the "free" end of the loop 46 extends behind the guide strip 47 as its end nearest the central support element 30, and the sides or limbs of the loop 46 firmly engage the sides of the catch 48, so as to hold the leg 40, 50 in this inoperative position until released by application of force. When the leg 40, 50 is so released and is swung upwards towards its supporting position, the end of the loop 46 slides along behind the guide strip 47 and eventually passed beneath the catch 48 (which has an inclined edge) and into a retention notch formed therein. In this position the loop 46 acts as a strut between the relevant leg 40, 50 and seat member, as shown in Figs. 1 and 3. The end of the loop 46 can only be released from this notch by the end of the catch 48 adjacent the guide strip being raised manually as the leg 40, 50 is swung towards the relevant seat member 10, 20.

The use of the seat assembly will readily be appreciated from the foregoing in conjunction with the drawings. To r capitulat , briefly, from the fully collapsed condition shown in Fig. 6, th catch 36 is releas d by foot pressur and th seat members 10, 20 are swung towards their operative position, as shown in Fig. 7. In this r sp ct, only on seat memb r 10 or 20 n eds to be manually swung as they are interconn cted for simultaneous movement by their mutual hing connections with the central support element 30. When they reach the operative position, at approximately 180° to ach other, th seat members 10, 20 are held by the further catch which engages at least one of the cross-pieces 13 of the seat member/central support element hinge connections (see Figs. 8 and 9). Once the seat members 10, 20 are thus held in their operative position, the legs 40, 50 can be swung down and this requires only slight manual force to release the loops 46 from engagement around the sides of the catches 48. When the legs 40, 50 are pulled to their supporting positions at 90° to the seat member, as shown in Fig. 3, the ends of the loops 46 are engaged by the catches 48 so that the legs 40, 50 will not fold down again until these catches 48 are specifically released. The erect assembly is very sturdy and provides a bench for two normal sized persons, bearing a weight of at least 130kg. without difficulty.

To collapse the assembly again, the catches 48 are manually released and the legs 40, 50 pushed up beneath the seat members 10, 20. The catch holding the cross piece 13 is then released and the seat members 10, 20 swung down until the one above the roller bearings 35 is engaged by the pedal catch 36.

In the collapsed condition, the assembly can be used as a small table, with a board forming a table top placed on top of the upper ends of the seat members 10, 20. Alternatively, it can be laid down with one seat member 10 or 20 arranged on top of the other and used as a footstool (i.e. the orientation shown in Fig. 7 when considered as an end view rather than a plan view). Of course, the collapsed assembly can also simply be stored in an out of the way place.

Also, in the collapsed condition the assembly can be propelled as shown in Fig. 5. For this, the handle 61 disposed between the folded leg 40 and the seat member 10 is pulled out, though its retention sleeve 60, between the upper ends of the folded seat members 10, 20. The assembly is then tilted towards the roller bearings 35, so that these above engage the underlying surface or floor, and in this orientation, it can be readily pushed or pulled by means of the handle. The frame extentions 34 on the base of the support element 30 are necessary to offset the roller bearings 35 (or other rotatable means) from the rest of the base 31 so that they alone contact the floor when the assembly is tilted, but when the collapsed assembly is not tilted or the assembly is fully or partially erected they do not in any way int rfere with the firm, non-movable support provided by the base 31.

It will be appreciated that the seat assembly is a useful piec of furniture.

The invention is not limited to the details of the above-described embodiment and many variations are possible. For example, the

shape and materials of the seat members, legs and support element may vary, and the seat members need not be upholstered. In this respect, if the legs are provided as pairs of tubular metal legs, the handle may be provided as an inverted U-shaped element which is telescopically received in one pair of said legs. In such a case, of course, both pairs of legs can lie flat against their respective seat members in the collapsed condition, as a separate space for accommodating the handle does not have to be provided between one of the pairs of legs and their seat member. Thus different hinges for the two sets of legs are not necessary.

Also the various releasable catch mechanisms may also differ from those described above and the catch mechanism for the legs may advantageously be modified to allow for the automatic downward swinging of the legs as the seat members are moved to their operative position. The roller bearings may also be replaced by wheels or castors.

In further, less favourable embodiments of the invention, the seat members may be independently swingable between collapsed and operative positions and they need not be of equal size or diametrically opposed at either side of the common support element. Also the legs could, in their inoperative position, be folded against the side edges or even the upper sides of the seat members instead of against the undersides thereof. The latter is, however, generally more favourable as it means they are, for the most part, out of sight when the assembly is collapsed.

Other minor variations are possible.

CLAIMS

1. A collapsible seat assembly comprising a pair of seat members each hingedly connected to the top of a common upright support element for movement between a collapsed position hanging adjacent the upright element and an operative position extending substantially perpendicular to the upright element, each seat member having, towards its outer free end, a swingable leg which is capable of supporting said seat member in its operative position.

2. A seat assembly as claimed in claim 1 wherein each swingable leg is movable between the inoperative position lying closely adjacent the underside of the respective seat member and a supporting position extending perpendicular to the respective seat member (and thus substantially parallel to the common upright support element).

3. A seat assembly as claimed in claim 1 or 2 wherein respective releasable catch means are provided to retain the seat members in their operative position and to retain the legs in their supporting position, so that the assembly, when erected, cannot be inadvertently collapsed.

4. A seat assembly as claimed in claim 1, 2 or 3 wherein the seat members are disposed at opposing sides of the common upright support element so that when they are both in an operative position they are aligned to form a continuous elongate bench.

5. A seat assembly as claimed in any preceding claim wherein the common upright support element has a base which is provided with rotatable means, such as bearings, castors or wheels, in such a way that the seat assembly is movable thereby only when the seat members are in their collapsed position.

6. A seat assembly as claimed in any preceding claim and further provided with a retractible handle.

7. A seat assembly as claimed in claim 6 wherein the handle is slidingly or telescopically mounted on the underside of one of the seat members and can only be operatively extended when that seat member is in its collapsed position.

8. A seat assembly as claimed in claim 6 wherein the seat members each have a pair of tubular legs and the handle is telescopically accommodated in one of these pairs of legs.

9. A seat assembly as claimed in any preceding claim wherein releaseable catch means are also provided to retain one or both seat members in their collapsed position.

10. A collapsible seat assembly as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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ABSTRACT:

A pair of seat members (10, 20) are each hingedly connected to the top of a common upright support element (30) for movement between a collapsed position hanging adjacent the upright element (30) and an operative position extending perpendicular thereto. Each seat member (10, 20) also has a swingable leg (40, 50) to support it in its operative position and releasable catch means (46, 47, 48) preferably retain the legs (40, 50) in their supporting positions. When erected the assembly forms a sturdy bench for two persons, yet when collapsed it is compact and readily movable, e.g. by means of rollers (35) and a retractable handle (61). <IMAGE>